

# 2010 Military Health System Conference

## Variations in Healthcare: Preliminary Findings

### Part 1 – Developing a repeatable method of inquiry and improvement for the MHS

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# The Cost Conundrum – Is it possible to improve quality and reduce costs



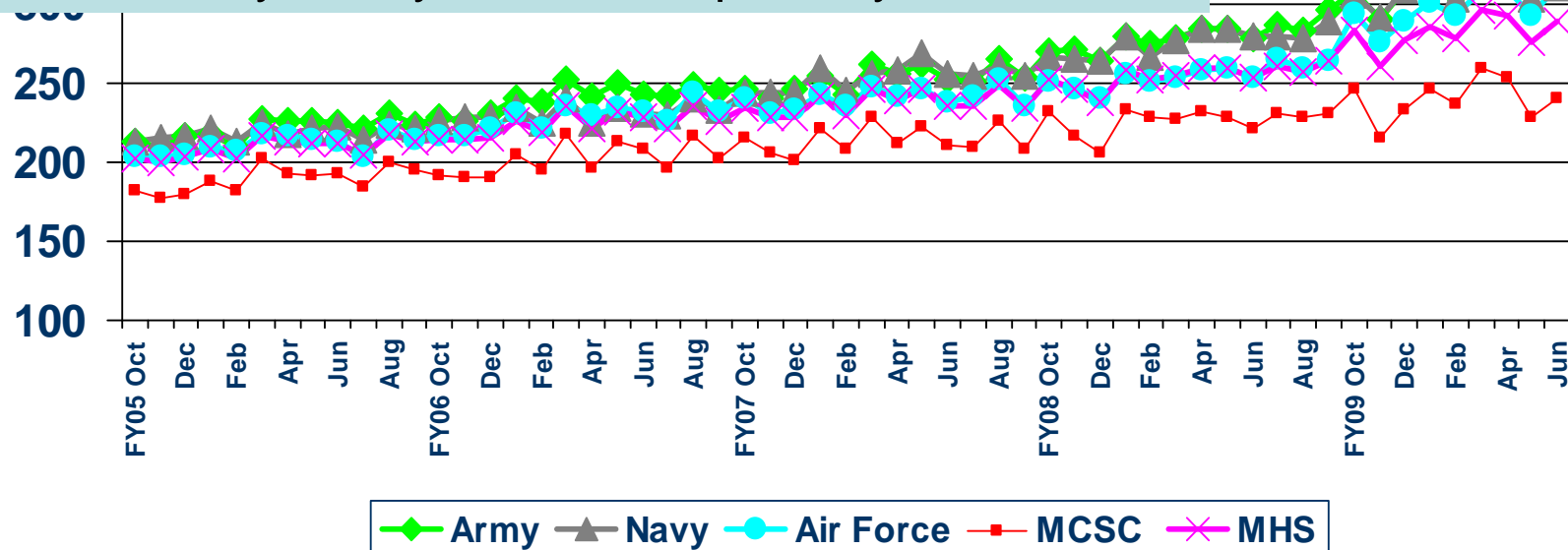
- One way is to follow evidence based guidelines to avoid unnecessary or dangerous tests or procedures
  - Supports the quadruple aim
- Need to identify areas of focus for our population
  - Start with cost drivers



# Medical Cost Per Equivalent Life Per Month (PMPM)



Medical expense per person per month in the MHS has risen by nearly 40% in the past 4 years



	FY05 YTD	FY06 YTD	FY07 YTD	FY08 Q1	FY08 Q2	FY08 Q3	FY08 Q4	FY08 YTD	FY09 Q1	FY09 Q2	FY09 Q3	FY09 YTD
● Army	221	241	249	268	278	283	289	279	303	315	320	312
● Navy	219	231	249	265	275	283	283	277	302	311	309	307
● Air Force	211	227	236	246	254	257	263	255	286	301	305	297
● MCSC: Network/PCM	189	202	214	218	229	228	230	226	232	247	241	240
● MHS Total	209	224	234	245	255	257	261	255	273	287	286	282

Data Source: M2 (SIDR/SADR/HCSR-I/HCSR-NI,PDTs); EASIV; Enrollees are adjusted for Age/Gender/Bencat  
Current as of Oct 09, with measure reported through Jun 09. (Portions of value are projected due to missing expense data from MTFs.)

# Analysis of the contributors to an increase in outpatient PMPM expenses



- From 2005 to 2008 the expense per enrollee per year increased by \$317 for non-AD enrollees.
- \$68 of that increase, or 21.5% of the total OP increase was caused by an increase in treatment for orthopedic related conditions
- As a rough calculation, if this applied to all enrollees then it would represent a total increase of  $\$68 \times 5,000,000 = 340,000,000$  over three years or \$113,000,000 per year in MHS expenses
- If there was a way to reduce unnecessary treatment while ensuring that the right treatment was delivered to those in need, we could save real dollars and improve outcomes

Note: MDCs and Product Line cannot be combined.

# Top 25 Primary Diagnosis for Orthopedic Related Conditions Based on Total Visits



Visits

MDC	Diagnosis Description	2005			2008			Change 05/08
		DC SADR	TED-Vst	Total Vst	DC SADR	TED-Vst	Total Vst	
8	7242 LUMBAGO	81,650	187,511	269,161	85,820	350,562	436,382	167,221
8	71946 PAIN IN JOINT INVOLVING LOWER LEG	53,814	124,875	178,689	60,957	226,456	287,413	108,724
8	7231 CERVICALGIA	29,079	96,907	125,986	36,229	190,947	227,176	101,190
8	71941 PAIN IN JOINT INVOLVING SHOULDER REGION	30,870	127,100	157,970	35,465	218,443	253,908	95,938
8	71945 PAIN IN JOINT INVOLVING PELVIC REGION AND THIGH	13,043	32,438	45,481	15,335	64,044	79,379	33,898
8	72610 DISORDERS OF BURSAE AND TENDONS IN SHOULDER REGION, UNSPECIFIED	9,390	22,761	32,151	11,311	50,690	62,001	29,850
8	7244 THORACIC OR LUMBOSACRAL NEURITIS OR RADICULITIS, UNSPECIFIED	7,028	25,635	32,663	9,687	47,709	57,396	24,733
8	71947 PAIN IN JOINT INVOLVING ANKLE AND FOOT	16,417	29,444	45,861	15,149	54,624	69,773	23,912
8	7243 SCIATICA					38,247	49,461	22,025
8	72871 PLANTAR FASCIAL FIBROSITIS					38,363	55,961	19,461
8	7241 PAIN IN THORACIC SPINE					25,333	34,853	15,270
8	7295 PAIN IN LIMB					70,650	114,072	13,473
8	7291 MYALGIA AND MYOSITIS, UNSPECIFIED					34,779	52,040	12,772
8	84500 UNSPECIFIED SITE OF ANKLE AND FOOT					31,392	54,883	12,633
8	7245 BACKACHE, UNSPECIFIED					54,753	83,383	11,039
8	71596 OSTEOARTHRITIS, UNSPECIFIED					18,978	35,080	10,954
8	72252 DEGENERATION OF LUMBAR DISC					31,588	38,224	9,680
8	8449 SPRAIN OF UNSPECIFIED JOINT					19,464	30,967	8,949
8	72632 LATERAL EPICONDYLITIS					21,019	31,451	8,095
8	72210 DISPLACEMENT OF LUMBAR VERTEBRAL BODY					24,917	30,584	7,100
8	8472 LUMBAR SPRAIN					29,536	37,004	7,026
8	7140 RHEUMATOID ARTHRITIS	12,783	13,779	26,562	11,264	21,578	32,842	6,280
8	8404 ROTATOR CUFF (CAPSULE) SPRAIN	3,472	21,779	25,251	2,384	28,246	30,630	5,379
8	7262 OTHER AFFECTIONS OF SHOULDER REGION, NOT ELSEWHERE CLASSIFIED	6,221	20,523	26,744	4,083	24,935	29,018	2,274
8	8470 NECK SPRAIN	13,746	35,697	49,443	12,359	36,942	49,301	-142

Lumbago, or non-specific lower back pain was the most common diagnosis, and had the greatest increase from 2005 to 2008, accounting for 436,000 visits in 2008

\*Total Visits is based on DC Encounters and TED Visits for FY05/08 combined.

# Is there unwarranted variation in the treatment of low back pain in the MHS



- If so, there may be an opportunity for improvement
- We need a new methodology to identify and quantify unwarranted variation
- That methodology is known as episode based analysis

# Unwarranted Variation in Health Care Delivery



- Variations among communities well known
  - e.g., Dartmouth Atlas or Health Care and [dartmouthatlas.org](http://dartmouthatlas.org)
- See Wennberg Presentation Tuesday morning

# Unwarranted Variation in Health Care Delivery



- Wennberg suggests three categories of variation not explained by illness, medical evidence or patient preferences:
  - Effective Care: Evidence-based Care
  - Preference-Sensitive Care
  - Supply-Sensitive Care

# Low Back Variation Study



- Preliminary study to examine diagnosis and treatment variations for low back pain relative to evidence-based guidelines
- Background
  - Episodes of care created using the Medical Episode Grouper (MEG)
  - Direct care encounters and purchased care visits during 2007
  - Continuously enrolled during 2007

# Low Back Variation Study



- Background continued
  - Excludes: Overseas regions, Eligibles 65 years and older and Guard/Reserve.
  - Qualified episodes
    - Disc disorders substantiated by one hospitalization or two visits separated by seven days
    - Nonspecific pain requires one face-to-face visit

# Low Back Variation Study



- Regions studied
  - 46 regions with MHS eligible populations over 30,000 profiled using these criteria representing 2.3 million MHS Eligibles

# Demographic Characteristics of the Study Sample



- Included 173,940 episodes
  - 70,684 Army (41%)
  - 46,313 Air Force (27%)
  - 13,912 Marine Corps (8%)
  - 39,845 Navy (23%)
  - 3,186 Other (2%)
  
- The majority of patients were:
  - 45 years old or younger (60%)
  - Female (51%)
  - Active duty enrollees & dependents (52%)

# Episodes of Care



- Health care is typically provided in a series of separate but related services. All of these services must be included to produce a comprehensive economic analysis of the health care delivery system.
- Using an episode approach enables a more appropriate assessment of costs of care and lends itself to the analysis of the processes as well as the outcomes of care.

# Episodes of Care



- MEG - Disease-based episodes of care.
- Episode severity predicated on the progression of medical complications of a disease,  
e.g., Coronary Artery Disease:  
Stage 1: Stable angina  
Stage 2: Progressive Angina  
Stage 3: AMI

# Lumbar Disc Episodes Defined



Episode Group: 365 Intervertebral Disc Disorders: Lumbar and Lumbosacral

Stage	Description	Diagnostic findings
1.01	Asymptomatic prolapse of the intervertebral disc	Herniated intervertebral disc [spine x-ray or MRI or myelogram report]
1.02	Symptomatic prolapse of the intervertebral disc	Stage 1.01 AND pain radiating to leg(s) or arm(s) OR weakness of arm(s) or leg(s) OR cervical radiculopathy [physical examination or EMG report] OR lumbar radiculopathy [EMG report]
2.01	with loss of bladder or bowel control	Stage 1.01-1.02 AND incontinence of urine OR incontinence of bowels
2.02	with cauda equina syndrome or conus medullaris syndrome	Stage 1.01-2.01 AND <b>cauda equina syndrome:</b> OR <b>conus medullaris syndrome:</b>
2.03	with paraplegia	Stage 1.01-2.02 AND paraplegia
2.04	with quadriplegia	Stage 1.01-2.03 AND quadriplegia
2.05	with pneumonia (aspiration or bacterial)	Stage 1.01-2.04 AND <b>pneumonia:</b>
3.01	with sepsis	Stage 2.05 AND <b>sepsis:</b>
3.02	with shock	Stage 2.05-3.01 AND <b>shock:</b>
4.00	with death	Stage 2.05-3.02 AND death

# Low Back Episodes in MHS Administrative Data

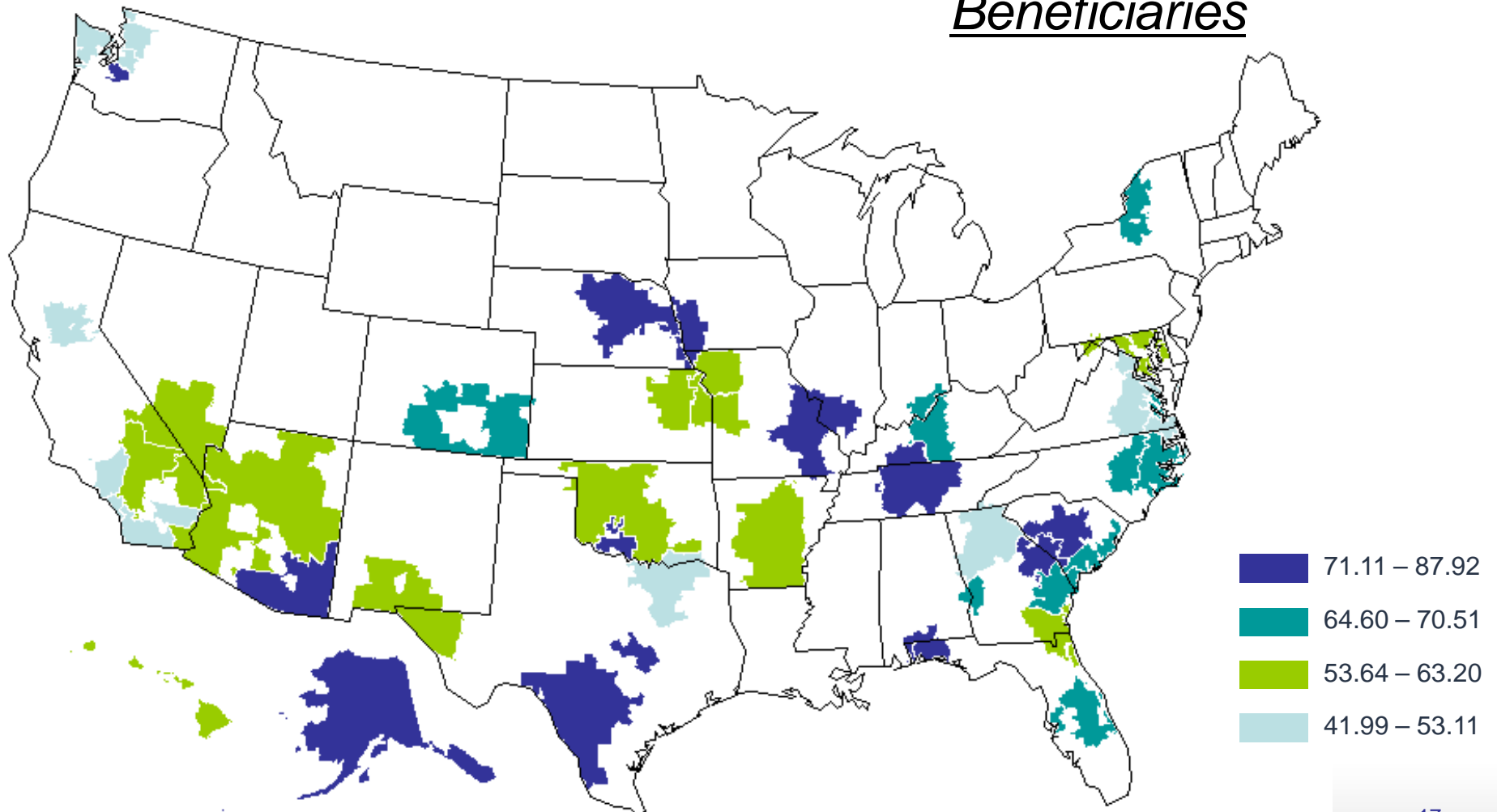


<i>Lumbar Disc Disorders</i>	Episodes	% Total
1.01 Asymptomatic prolapse	8,847	5.1%
1.02 Symptomatic prolapse	895	0.5%
2.01 w/Loss of bladder or bowel control	9	0.0%
2.02 w/Cauda equina or conus medullaris	19	0.0%
2.03 w/Paraplegia	2	0.0%
2.05 w/Pneumonia	4	0.0%
	9,776	5.6%
<i>Other Spinal and Back Disorders</i>		
1.01 Lumbago, sciatica, torticollis, other symptoms	146,402	84.2%
1.02 Spinal stenosis, low back	17,735	10.2%
	164,137	94.4%
<i>Total</i>	173,913	

# Incidence of Nonspecific Low Back Pain in MHS Claims & Encounters



Age/Sex Adjusted Episodes per 1,000  
Beneficiaries



# Consistencies in Low Back Care



- 5th most common reason for all physician visits in the US
- 85% can't be attributed to a specific disease or abnormality
- Specific diagnosis does not improve outcomes
- Most resolve in 1 month w/noninvasive management, incl. herniation w/radiculopathy

Chou R, Qaseem A, Snow V, et al. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Ann Intern Med* 2007;147:478–91

# Investigation 1: Variation in Watchful Waiting



Guideline Source: *Diagnosis and Treatment of Low Back Pain: A Joint Clinical Practice Guideline from the American College of Physicians and the American Pain Society*

*Ann Intern Med*; October 2, 2007 vol. 147 no. 7 478-491

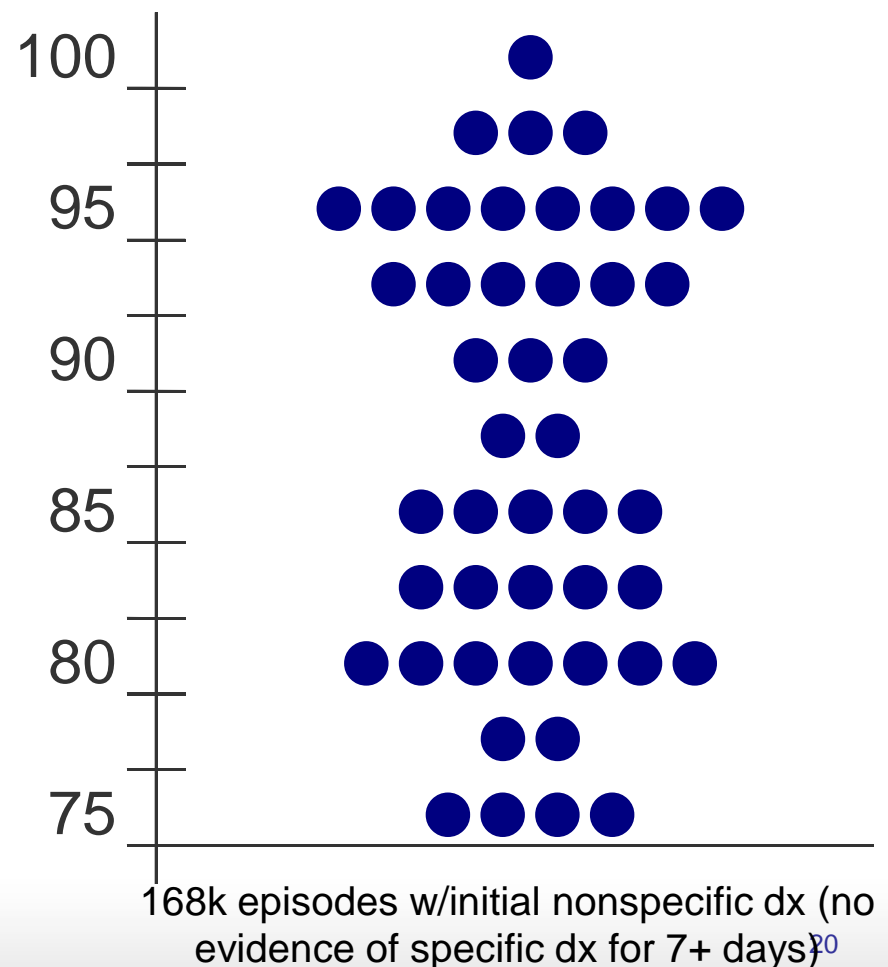
- Recommend self-care & medication for 1<sup>st</sup> month
- No routine diagnostic tests for nonspecific low back pain
- If symptoms persist despite self-care, consider imaging

# Investigation 1: Variation in Watchful Waiting



- *...should not routinely obtain imaging ... in patients with nonspecific low back pain (strong recommendation, moderate-quality evidence)<sup>1</sup>*
- Of 168k episodes with initial dx of nonspecific low back
  - 73% resolved within one month (no additional claims for at least 60 days)
  - 88% had no diagnostic procedures in 1<sup>st</sup> month

## % no Diagnostic Procedures in 1<sup>st</sup> Month

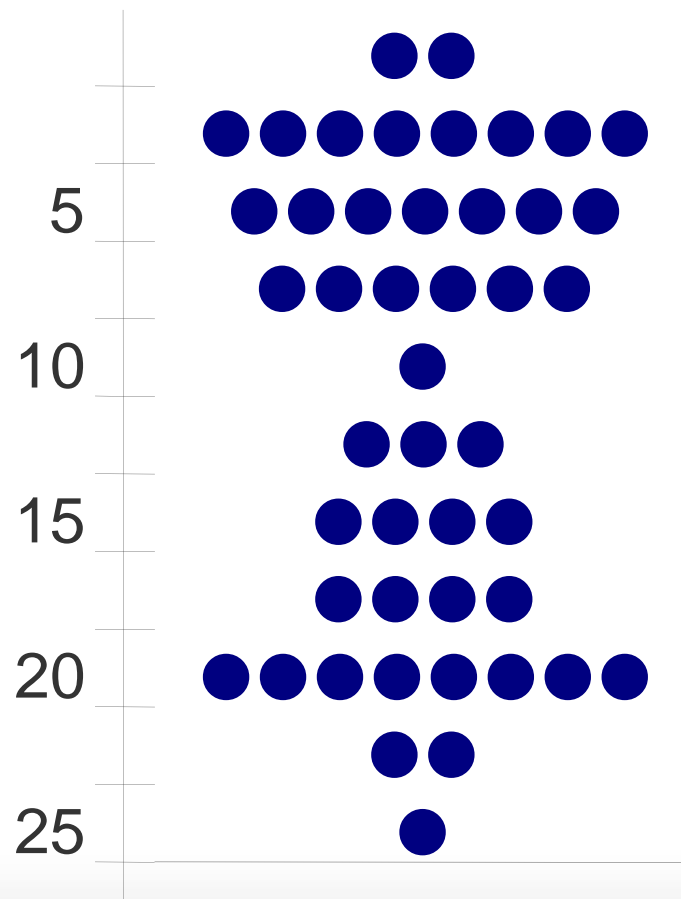


<sup>1</sup>Chou R et al. Ann Intern Med 2007;147:478-491

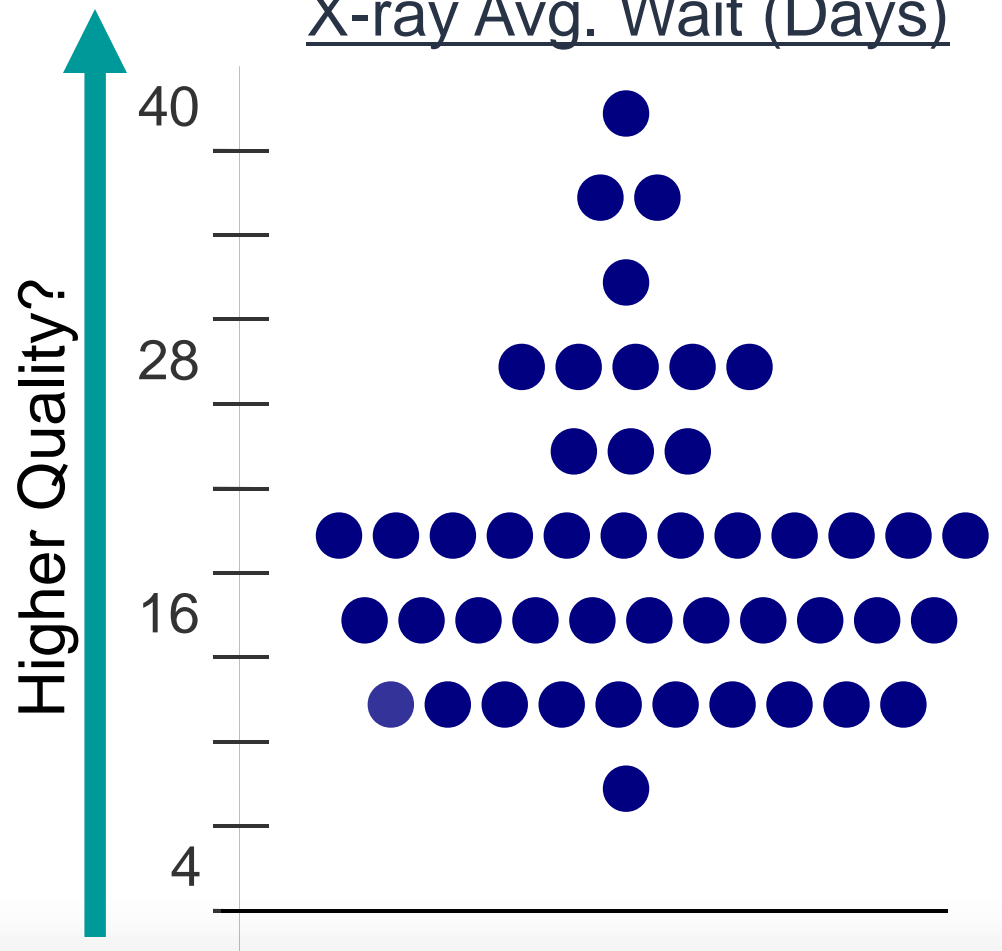
# Investigation 2: Variation in use of Plain Film X-Rays



% Episodes w X-ray



X-ray Avg. Wait (Days)



Higher Quality?

# Investigation 2: Variation in use of Plain Film X-Rays



Guideline Source: *Diagnosis and Treatment of Low Back Pain: A Joint Clinical Practice Guideline from the American College of Physicians and the American Pain Society*

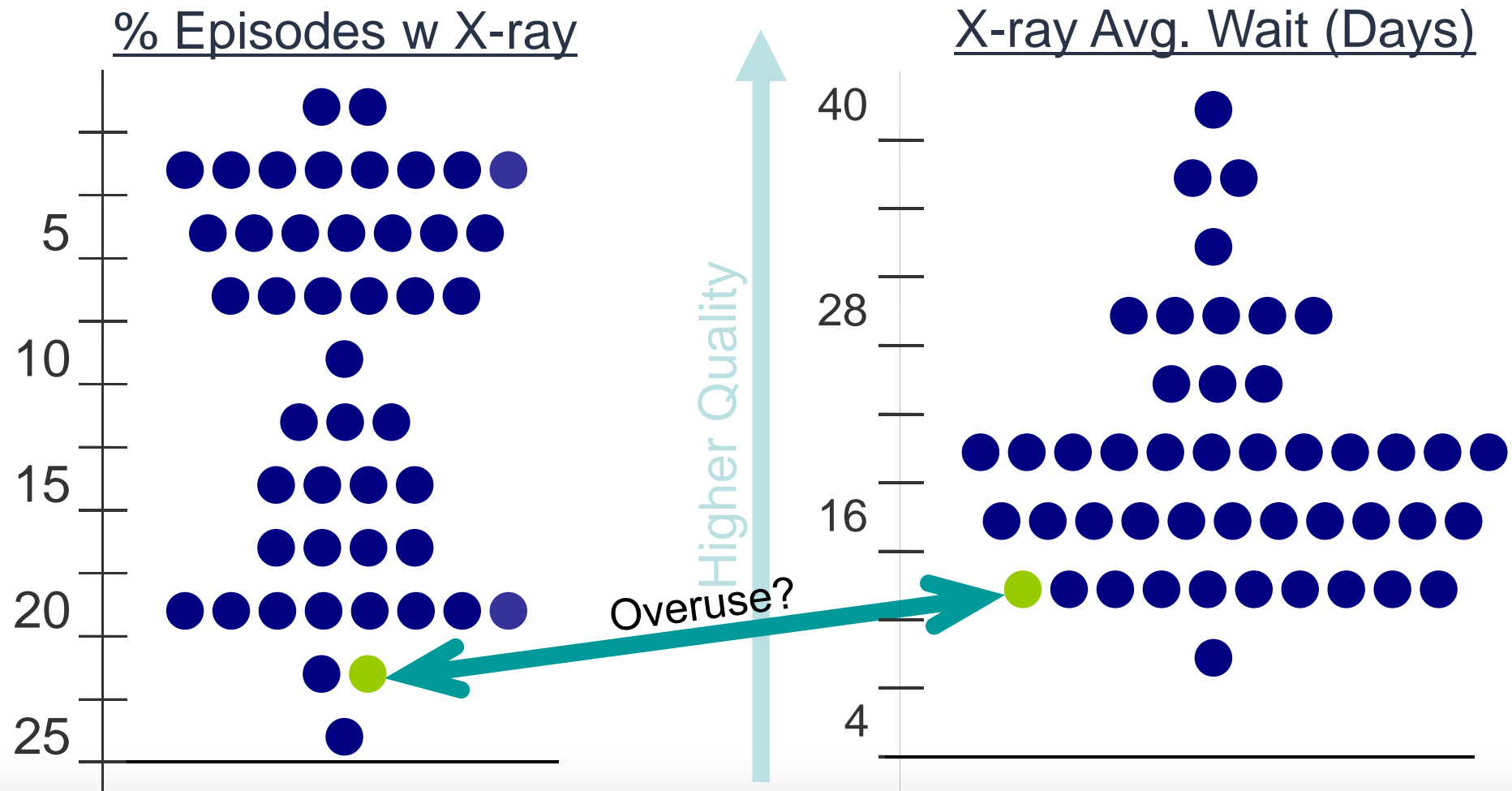
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- Careful triage into 3 categories based on H&P:
  1. Nonspecific low back pain
  2. Pain w/potential stenosis or radiculopathy
  3. Pain w/potential other cause, e.g. osteoporosis & risk for compression fracture
- X-ray best for rule-out of fracture in #3; not appropriate for #s 1 or 2

# Potential Overuse of Plain Film X-Rays



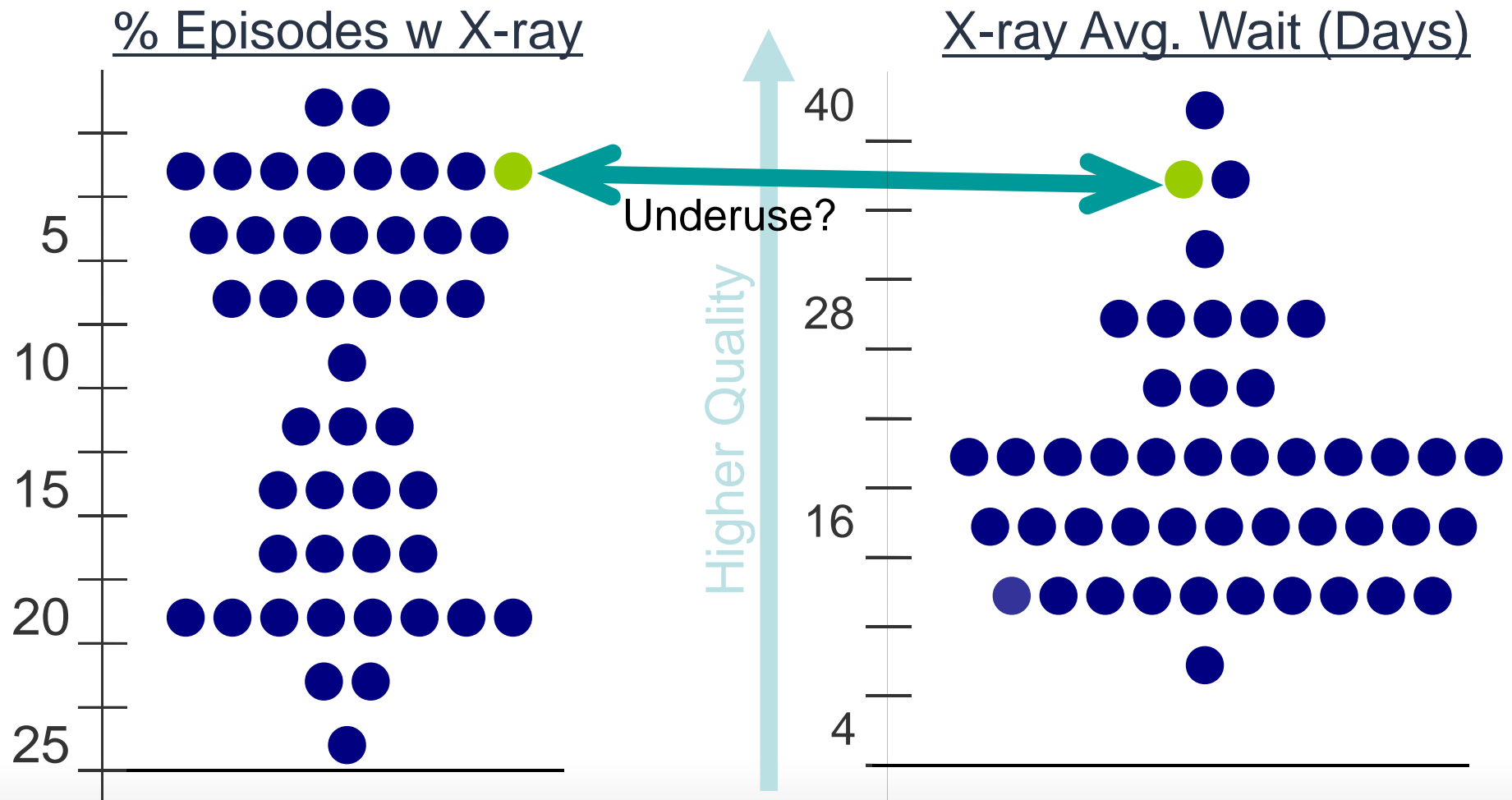
Augusta, GA's short wait & high rate could indicate overuse



# Potential Under-use of Plain Film X-Rays



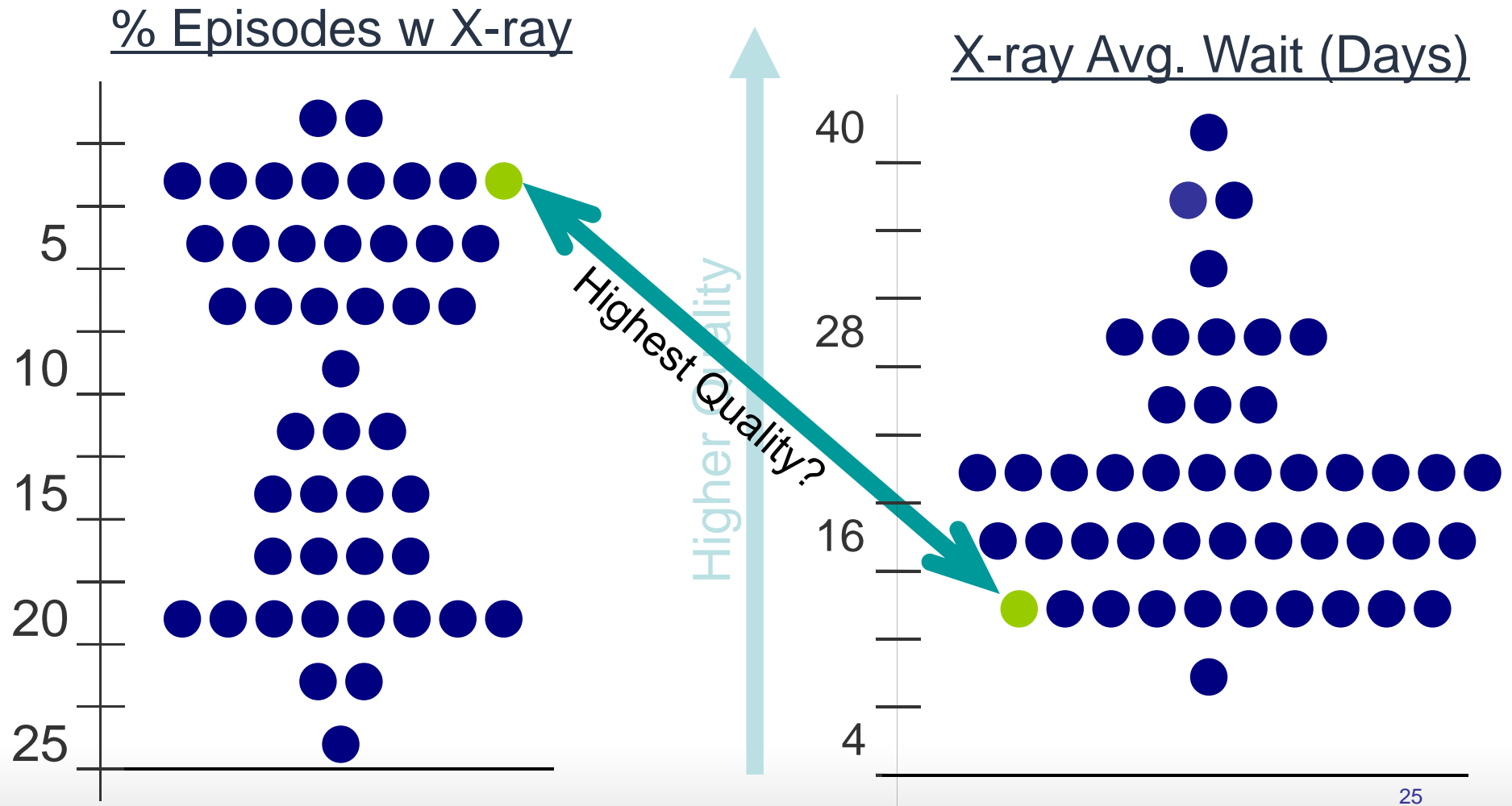
Long wait & low rate in El Paso, TX could indicate underuse.  
If risk of fracture is high, x-ray should be done early.



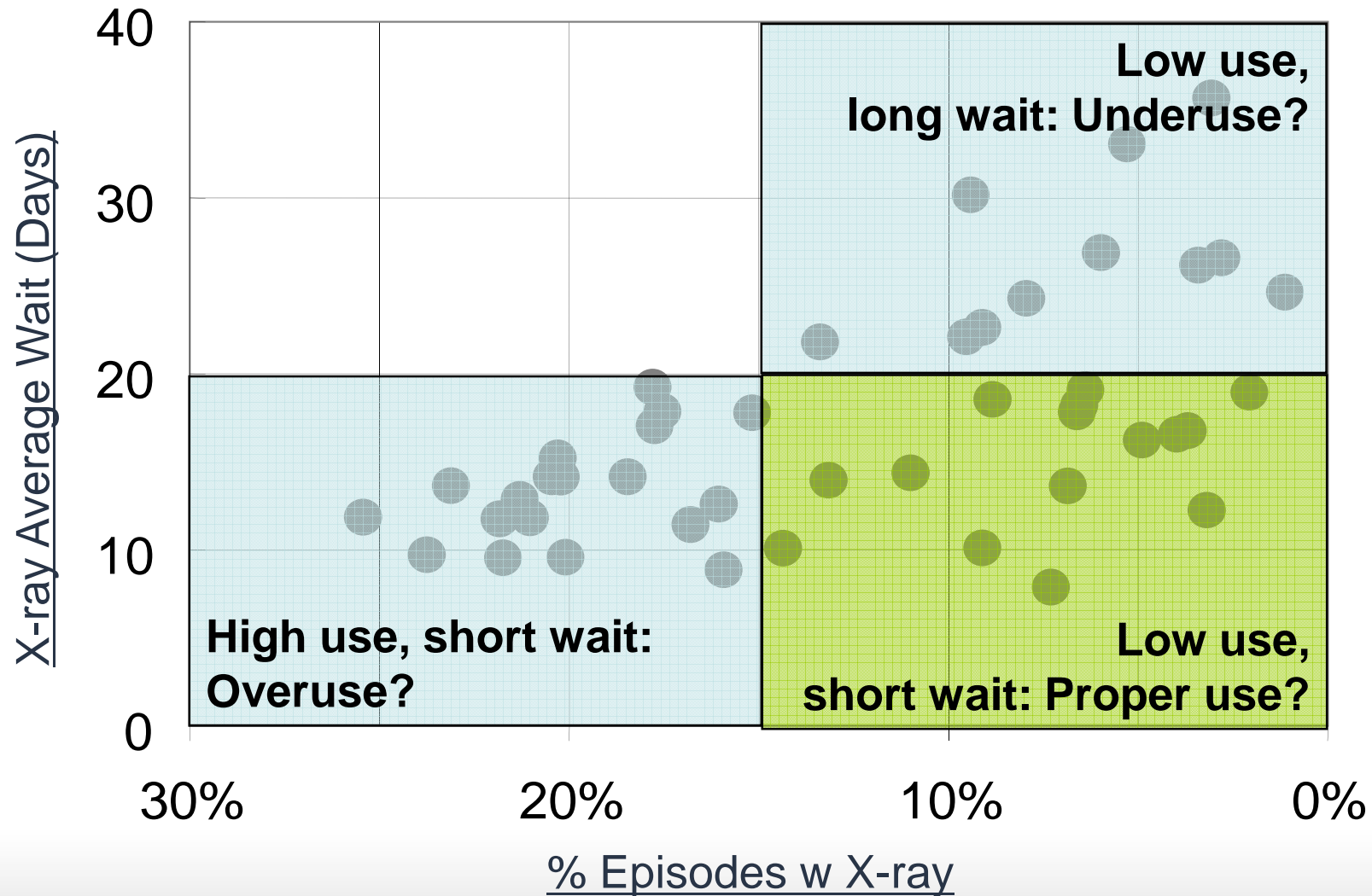
# Potential Proper Use of Plain Film X-Rays



Washington, DC's low rate & short wait could indicate careful triage & speedy rule-out of fracture



# Variation in Utilization of X-Ray



# Next Step – Chart Review (Preliminary Findings)



- Objective
  - Collect baseline measures of the treatment of low back pain
    - Metrics indicators by the 1999 DoD/VA committee
- Methods
  - Retrospective, cross-sectional design
  - Collect administrative data and medical records information
  - Sampling plan based on HEDIS:
    - DoD beneficiaries with primary diagnosis for LBP during FY 2008 - Outpatient & ER visits
- Study Champion

LCDR Leslie Rassner, MD  
Primary Care Sports Medicine  
Branch Medical Clinic, Naval Base San Diego

# Use of Imaging in Low Back Pain – Summary of Preliminary Findings



Imaging Studies	Red Flag Conditions	
	Screen Neg	Screen Pos
Got Imaging	2661 (25%) Overuse?	681 (33%) Recommended
No Imaging	7964 (75%) Recommended	1385 (67%) Underuse?
Totals	10,625 (84%)	2066 (16%)

***The chart review confirmed the possibility of both underuse and overuse of imaging studies in the management of low back pain***

# Summary and Observations



- Low back pain is a significant contributor to increase in per capita costs for the MHS
- Low back pain is an example of preference sensitive care, consistently associated with unwarranted variation
- In the MHS, significant regional variation exists in the prevalence of LBP and in the use of imaging in the management of non-specific LBP
- There is strong suggestion from the available data that both underuse and overuse of imaging could be contributing to sub-optimal quality and cost outcomes

# Potential



- This approach may yield a repeatable process for analyzing and improving quality and cost across the MHS:
  - Identify large contributors to per capita cost increases
  - Look for local variation in care intensity (procedures, tests, pharmaceutical use, hospitalization) (MEG)
  - Compare to evidence based guidelines (Chart Review)
  - Implement focused improvement efforts led by community of interest